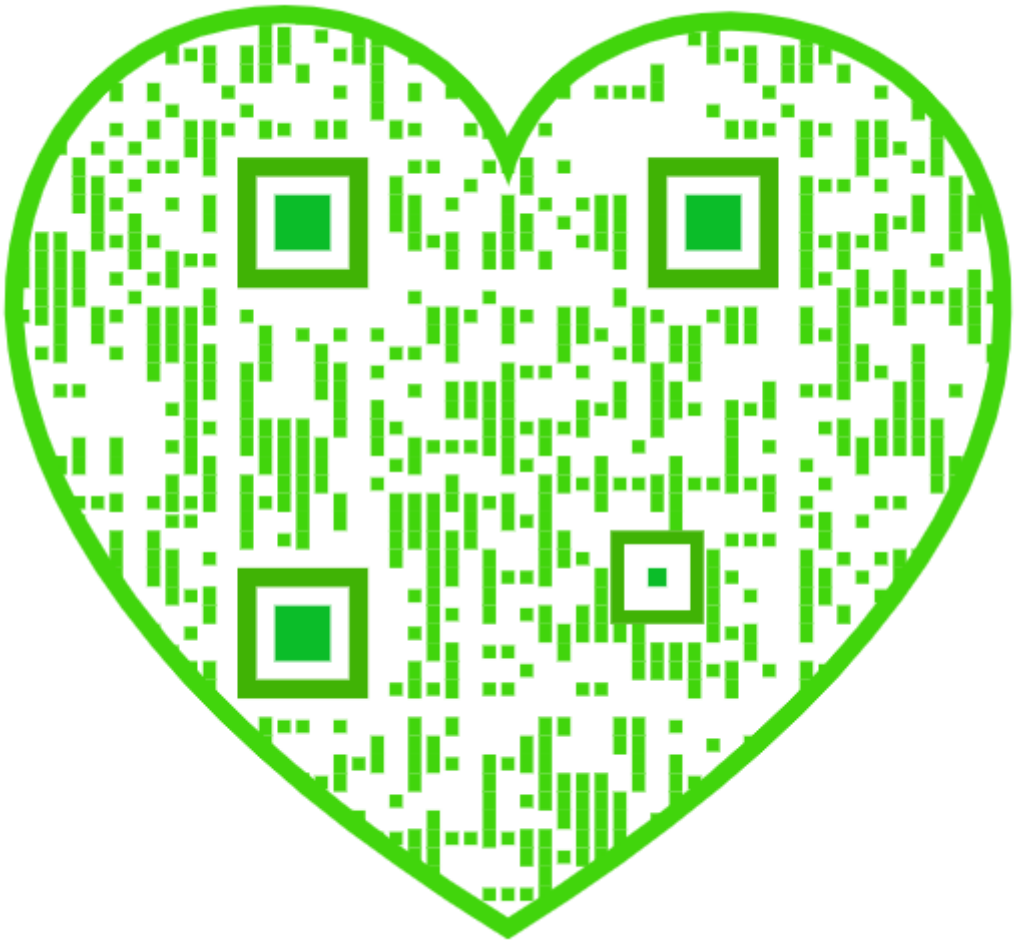

ARCHITECTURE.

Engraved by Wm. S. Jocelyn.

INDRA SUBBA, AT ELLORA.

NEW HAVEN.

HEZEKIAH HOWE.

1831.

Plate IX.

ARCHITECTURE.

PART I.

ANCIENT ARCHITECTURE.

"He *built* him a *hut*,
"And in it he put.——"

"Cloud-capt towers, gorgeous palaces,
"Solemn temples."

NEW HAVEN:

HEZEKIAH HOWE.

1831.

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INTRODUCTION.

TO MY YOUTHFUL READERS.

The age in which we live, has been called by a great many names, "the age of experiment," "the age of steam!" &c. &c. &c. There is another name which it well deserves, "the age of Useful Improvements." Books, which were formerly read and understood only by the learned, have been made simple for you. The study of almost every subject has been rendered both easy and delightful. No "royal road to learning" has been discovered, but the old rugged path has been so cleared, and so smoothed, by modern improvements, that it is now like a rail-road. You can make grand progress if you will; yes, if you will. It depends entirely upon *your own efforts*, with all these advantages, whether you are learned or ignorant, respected or despised.

Among the books on various subjects designed for you, I have never found one on Architecture. It is a noble and a useful art; one in which you all have an interest, and about which you ought to have some knowledge.

I offer you my little book in Three Parts.

Part I. Ancient Architecture.

II. Greek, Roman, and Gothic Architecture.

III. Modern Architecture.

If I have been successful in interesting you in this First Part, the Second Part, which is in itself more interesting, as the art was brought to perfection under the Greeks and Romans, shall soon make its appearance.

TO INSTRUCTORS OF SCHOOLS.

This little work was not originally designed for a school-book. The author, however, begs leave to suggest, that it would be a suitable class-book for older scholars to read in school. There are many sub-

jects about which young people should not be ignorant, which cannot well be taken up as regular studies. Architecture, is one of these subjects. It ought not to be neglected entirely; some knowledge of it would be useful and interesting to every one.

While reading merely for an exercise, scholars usually devote very little attention to the *subject matter.* This is a bad habit, for two reasons;—their emphasis will not be correct, if they do not read understandingly; and, if they glide over books without gaining ideas at school, they will be apt to do so ever afterwards.

The books, therefore, used in schools as class-books, should be interesting and at the same time useful—that while scholars are gaining a good pronunciation, emphasis, tone, &c. they may also be acquiring valuable information. After each reading, questions should be asked by the instructor about the subject. For that purpose questions have been subjoined to this work; not, that they would not readily have suggested themselves to teachers, but, their time is usually so much

occupied, that they need every thing to facilitate their labors. Small books are preferable to large ones to read in this manner; the time which can be devoted to them from day to day is so limited, that the interest is lost before a large work is completed.

After reading a book two or three times over in the manner proposed, scholars will acquire a good knowledge of it, without realizing that it has cost them any time or trouble.

Maps should always be consulted by readers, when the names of places are mentioned.

New Haven, 1831.

CHAPTER I.

ARCHITECTURE is *the art of building.* We say of the Almighty Creator, that he is the great Architect of the Universe. Birds, who construct their nests with such wonderful skill and neatness, we call ingenious little architects. But I am now going to tell you only of the works of mankind, in

> "That art, where most magnificent appears
> The little builder, man."

There are three kinds of Architecture:—

1. Civil Architecture.
2. Naval Architecture.
3. Military Architecture.

The *first*, comprehends all that relates to edifices constructed for the purposes of

civil life. The progress of society varies and increases the wants of men. In the advanced stages of civilization, buildings are required for religion, education, legislation, public exercises and amusements, commerce, and for domestic life. These, all come under this branch of the art.

The *second*, is the art of *ship-building*. This comprehends floating vessels of all kinds; those used for war, for commerce, for transportation, for discovery. The construction of moles, ports, and docks, also belongs to Naval Architecture.

The *third*, is the art of strengthening and fortifying towns and other places, to protect them from the assaults of enemies. The erection of forts, castles and other fortresses with ramparts, bastions, &c. belongs to this branch of the art, which is usually termed, Fortification.

The first of these branches, is the one which is going to occupy our attention in this little book—viz:—

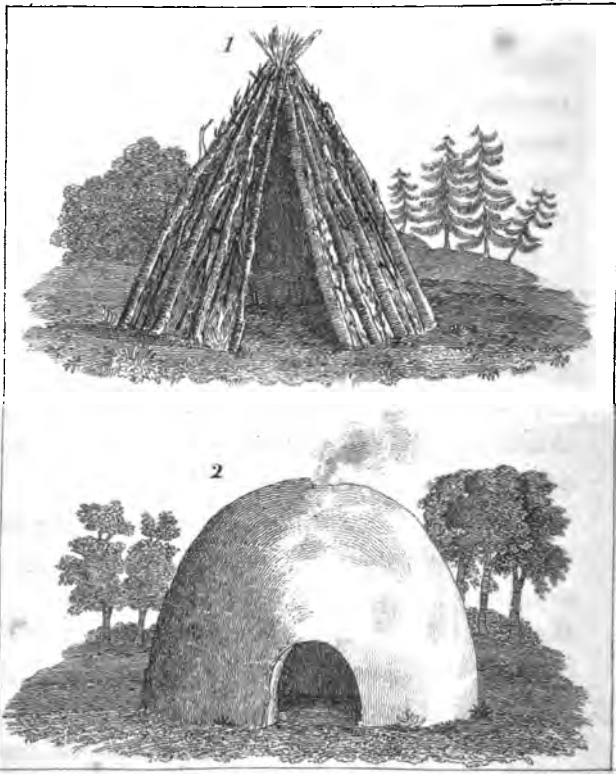
CIVIL ARCHITECTURE.

We cannot have much historical evidence respecting the origin and early progress of this art, but some kind of shelter being necessary for the comfort and protection of man, it must have been practiced ever since his creation.

Our first parents were placed by their Maker, in a beautiful garden. The air was so mild, and the climate so delightful, that they probably needed very little shelter except what the thick foliage of the trees afforded. That fine poet Milton, has imagined for them a "blissful bower," which he thus describes:—

"It was a place
Chosen by the sovran Planter, when he framed
All things to man's delightful use; the roof
Of thickest covert was inwoven shade,
Laurel and myrtle, and what higher grew
Of firm and fragrant leaf; on either side
Acanthus, and each odorous bushy shrub,
Fenced up the verdant wall; each beauteous flower
Iris all hues, roses, and jessamine, [wrought
Reared high their flourished heads between, and
Mosaic; underfoot the violet,
Crocus, and hyacinth with rich inlay
Broidered the ground, more colored than with stone
Of costliest emblem; other creature here,
Bird, beast, insect, or worm, durst enter none,
Such was their awe of Man."

Alas, Adam and Eve did not long enjoy this beautiful home! After they had sinned and were expelled from the garden of Eden, every thing was sadly changed. Doubtless, they soon toiled in "the sweat of their brow," to erect a more substantial dwelling-



PRIMITIVE HUTS.

place than a leafy bower. In our climate, we should find such a "shady lodge" a very miserable protection against the scorching sun, the pelting rain and hail, the driving wind and piercing cold.

Every invention has its origin in the wants of man. As his mind increases in power, all material things are brought into use to contribute to his comfort and his pleasure; the whole created world is subjected to his dominion. But, he advances by slow degrees to this proud pre-eminence.

Among *savage nations*, buildings are of very slight construction. Their rude huts are formed of the trunks of trees driven into the ground and fastened together at the top. See Plate I. fig. 1. The branches and leaves of trees are then interwoven; they are covered with bark, and some of the holes are perhaps filled up with mud or

coarse clay. Such were the miserable dwellings of the North American Indians, which they called wigwams.

Fig. 2, Plate 1, represents another kind of primitive habitation. It is in the shape of a dome. These huts are formed of long pliable sticks, which are bent, sharpened at both ends and stuck into the ground. This forms the frame of the building. Then, they are thatched with straw, and afterwards plastered inside and outside with clay or earth, which becomes dry and hard. A place is left for entrance, about two or three feet high, through which the tenants must creep on all fours! A hole is also left at the top to admit the light, and to suffer the smoke to escape. The Caffres and other nations in South Africa, live in such habitations. Large villages, which they call kraals, are made up of them; their

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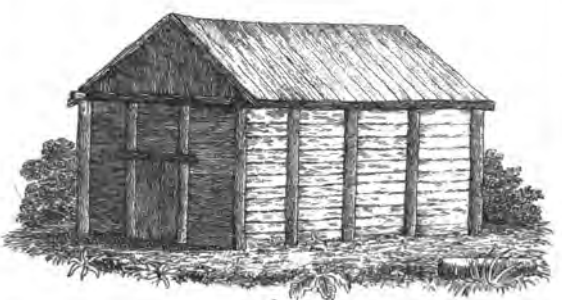


2

TENT. HOUSE.

king himself has only such a *big oven* for his royal palace; distinguished, perhaps, from those of his subjects by a large enclosure made of rough wooden posts.

Tents, were among the earliest habitations of men. These were at first made of the skins of animals, afterwards of felt and cloths of various kinds. Poles are placed in the ground so as to be easily removed, and then the covering of the tent is fastened to them, spread out and fixed by pegs, or in some other way, to the ground. See Plate II, fig. 1. The patriarchs mentioned in the Old Testament, were dwellers in tents. Their wealth consisted of immense herds of cattle. Moveable habitations were therefore most convenient,

"While on from plain to plain they led their flocks,
In search of clearer spring and fresher field."

The children of Israel during their forty-years wandering in the desert, made use of tents. Even the rich tabernacle constructed by Moses' direction, from the pattern shown him by the Lord, for a place of religious worship, was only a spacious and elegant tent. The Bedouin Arabs, and other wandering tribes, still spread their tents in the deserts. They are sometimes made very large and convenient, and are even richly ornamented. They are also used by armies when they encamp, and have a beautiful appearance spread over a large tract of country, among trees, hills, and streams of water.

It was a very important step in the progress of Architecture, when the trees were smoothed into posts, and placed in a square form, with a covering or roof over them. Simple as this invention now appears, we

are greatly indebted to him who first devised it. Common dwelling-houses have continued very much in the same form ever since. Edifices of this kind were at first extremely rude, resembling perhaps Plate II, fig. 2, but still they were to this art, what sails were to Navigation—I mean, as much of an improvement, as from the use of oars and paddles to the use of sails. In many parts of Asia and the Asiatic Islands, they build their houses of bamboo canes, line them very neatly with straw-mats, and cover them with palm leaves.

Another important advance in the art of building, was, when stones were used instead of wood. A durable material being found, attention would soon be paid to the appearance of structures, which would serve for several generations.

The term Architecture can, however, scarcely be applied to these first efforts of mankind, while in that state where

> " The simpler arts, were all their simple wants
> Had urged to light."

From these imperfect and inconvenient structures, men learnt to rear stately and convenient edifices. After they had provided comfortable abodes and united in communities, they would next erect strong buildings for defense. The tower of Babel was probably mainly designed for that purpose. Ambition undoubtedly prompted the reputed founder, Nimrod, to this undertaking. "Go to, let us make brick, and burn them thoroughly. And they had brick for stone, and slime for mortar." "And they said, Go to, let us build us a city, and a tower, whose top may reach

unto heaven, and let us make us a name, lest we be scattered abroad upon the face of the whole earth." The Lord put a stop to this presumptuous undertaking, after it had made some progress, by confounding their language :—

"Forthwith a hideous gabble rises loud
Among the builders; each to other calls
Not understood, till hoarse, and all in rage.
Thus was the building left
Ridiculous, and the work *Confusion* named."

CHAPTER II.

HAVING taken a rapid glance at the progress of the art of building, we are now prepared to enter upon the period when more lasting edifices were constructed. Build-

ings for domestic purposes, continued for a long time of slight construction; it is therefore to public buildings, that we must have recourse to discover and trace the inventions and improvements in Architecture, during remote ages. Works of great magnificence still remain in Egypt, Persia and Hindostan. When, or by whom, these stupendous monuments of the indefatigable labor of man were erected, is uncertain. We know that they have very great antiquity. It is also impossible to determine with certainty in which of these countries Architecture was first brought to that degree of perfection which these splendid remains exhibit. Egypt is allowed to have been the birth-place of the arts and sciences, and we may rationally conclude that the first grand experiments in Architecture, were made in that country.

EGYPTIAN ARCHITECTURE.

Look at your map of Africa—find Egypt. See; it is a country of small extent, but it once abounded in wealth and had an immense population. The traveller is struck with wonder and admiration, at the number, size and magnificence of the structures scattered over that land:—

"Rent palaces, crushed columns, rifled moles,
Fanes rolled on fanes, and tombs on buried tombs."

Egypt contains ancient buildings of three distinct forms.

1. The simple pyramid.
2. Excavations, caverns or grottos.
3. Apartments connected by walls with flat roofs, supported by rows of columns, and connected by open porticos.

1. On a plain which extends from Cairo along the Nile about fifty miles, are the famous Pyramids. There are about forty still standing; the three largest are in the neighborhood of Djiza, called the Pyramids of Cheops, Cephrenes or Cephron, and Mycerines. The great Pyramid of Cheops, which is the largest in the world, has stood through the storms and convulsions of more than thirty centuries, and will undoubtedly stand, till

"The cloud-capt towers, the gorgeous palaces,
The solemn temples, the great globe itself,
Yea, all which it inherit, shall dissolve,
And, like the baseless fabric of a vision,
Leave not a wreck behind."

This Pyramid (Plate III.) is five hundred feet in height, and seven hundred and twenty-eight feet (one-seventh of a mile)

THE GREAT PYRAMID.

Plate III.

on each side of the base. It is therefore a walk of more than half a mile around it. It is ascended by steps. Upon the top is a platform, thirty-two feet square; here, travellers of all nations and ages of the world, have inscribed their names in their respective languages. This platform consists of nine large stones, each of which would weigh a ton, twenty hundred weight! Some of the stones in other parts are still larger! They are of hewn granite and limestone, on the outside cemented together with fine mortar, in the interior so nicely made and fitted together, as not to need cement. Do you ask how they drew up these immense stones to such a height? Who can tell? Contrive a way if you can!

The second Pyramid, that of Cephrenes, is three hundred and ninety-eight feet high and six hundred and sixty-five feet on

each side of the base. Belzoni, an enterprizing traveller, discovered its entrance in the north front in 1818. Advancing through a passage one hundred feet long, he came to a spacious chamber, twenty-three feet high, cut out of the solid rock. In this chamber was a granite sarcophagus, (stone coffin) half sunk into the floor, with many bones in it, some of which proved to be those of the cow! All the pyramids are finished in the interior with immense labor. They contain many large apartments—long and intricate passages, &c. The walls are covered with hieroglyphics, some of which are sculptured, others painted, the colors still fresh as if recently executed. It is doubtful for what purpose these stupendous edifices were erected; whether for tombs or for temples, or for both together. The ancient Egyp-

tians believed, that the soul could exist no longer than the perishable body, but as long as that could be kept from dissolution, the spirit would continue; they therefore took great pains to preserve the dead by embalming, and then placing them in situations where they would remain undisturbed. It has been supposed by many, that the pyramids were the sepulchres of kings:

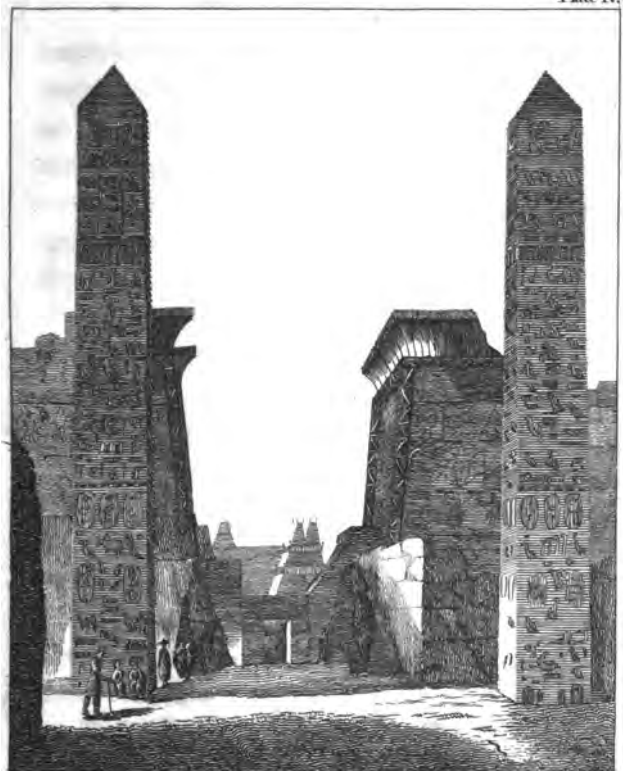
"And round a tyrant's tomb, who none deserved,
For one vile carcass, perished countless lives."

The pyramids of Saccara, stand at some distance from the great pyramids, and are in a more ruinous state. Some of them are rounded at the top; others are ascended by steps, like the pyramid of Cheops. One of them, which is in a very ruinous condition, was built entirely of unburnt bricks, composed of gravel, shells, and chopped straw.

These are supposed to be of more recent date, although more ruinous, than the other pyramids. They were not originally as well built, nor of as durable materials. Some authors assert, that these were the works upon which the Israelites toiled, under their hard task-masters. But this, it is impossible to ascertain.

2. Caverns or grottos, dug out of the solid rock, were also used as tombs and temples by the Egyptians. Many have been discovered, containing well formed columns, and fine specimens of sculpture and painting upon the walls.

3. Temples. These are so numerous and so interesting, that it is exceedingly difficult to know which to select for description. They are scattered in rich profusion all the way along on both sides of the Nile. At Thebes there are splendid ruins on both

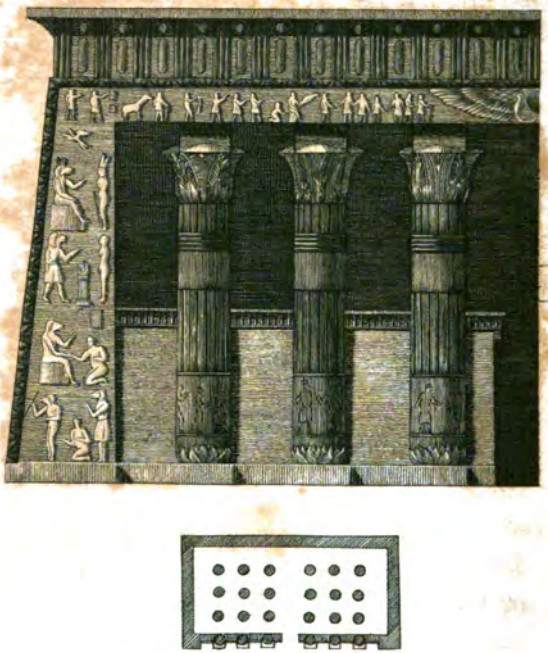


ENTRANCE TO LUXOR.

sides of the river. Karnac and Luxor are on the eastern side. Karnac is the greatest edifice in Egypt. It is an enormous structure, containing such a number of courts, colonnades, porticos, colossal statues, lofty door-ways, sphinxes, &c. that the mind is bewildered and lost amid their endless variety. The space I have allowed myself is so limited, that I cannot attempt here, a description of the wonderful Karnac.

The entrance to Luxor, (See Plate IV.) is distinguished by two *obelisks*, ornaments considered as peculiarly belonging to Egyptian Architecture. They are slender, tall, four-sided stones, pointed at the top, and usually hewn out of one entire block. They are covered on all sides with hieroglyphics. The beautiful obelisks of Luxor are about a hundred feet high, and ten feet square at the base; they are carved from a single

block of granite. A modern traveller thus describes them:—"Before the grand entrance of this vast edifice, (Luxor,) two lofty obelisks stand proudly pointing to the sky, fair as the daring sculptor left them. The sacred figures and hieroglyphic characters, are beautifully cut into the hard granite, and have the sharp finish of yesterday. The very stone looks not discolored. You see them as Cambyses saw them, when he stayed his chariot-wheels to gaze up at them, and the Persian war-cry ceased before these acknowledged symbols of the sacred element of fire. Very noble are all these remains, but my eyes were continually attracted towards the aspiring obelisks, and again and again you turn to them with increasing wonder and admiration." Many other parts of the building to which these obelisks form the grand en-



PORTICO OF THE TEMPLE OF LATOPOLIS.

trance, remain entire. The first colonnade is ruinous, but the second, consisting of two ranges of columns, is still standing. These lofty columns are fifty-six feet high, and the diameter nine feet. It is supposed that the idea of colonnades was suggested by regular rows of trees, the high trunks of which form beautiful natural columns. Groves were the places where religious worship was first performed, and the imitation of them was doubtless attempted by the architects who constructed the first sacred edifices.

On the western side of the river is Latopolis. Plate V, is a view of half the front of the portico, to this splendid temple. There are twenty-four columns in all, six in a row.* The capitals all differ, yet

* See, ground-plan of the portico, Plate V.

each is finished in a masterly manner. But I will explain to you now, the several parts of a column. The body of a column is termed the *shaft.* It is a pillar, sometimes with a plain surface, sometimes fluted, reeded, or both together. *Flutings* are concave, *reedings* are convex; the former are chiseled out in perpendicular stripes; the latter, look as if the shaft was designed to represent a bundle of smooth sticks or reeds fastened together, from whence it is called *reeding.*

At the bottom of the shaft is a block, upon which it rests; this is called the *base.*

At the top of the shaft is an ornamented part, which is called the *capital.*

Observe the columns upon Plate V. The base is a small square block. The circumference of the shaft where it rests upon the base, is quite small; it enlarges sud-

denly, and continues the rest of the way to the capital, of nearly equal size. It will be seen hereafter, that the proportions of modern columns are very different from this. These shafts are ornamented with sculptures near the base, in what is called *bas-relief*, (that is, carved figures a little raised from the surface.) The centre of the shafts are reeded; a plain space is above the reeding; then four bands or cords run around; then there are reedings above, next to the capital. Observe these highly finished and beautiful capitals, with regular leaves of different kinds.*

The temple of Latopolis was dedicated to Jupiter Ammon. Alexander the Great, when Egypt submitted to his authority,

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* This subject will be more fully explained in Part II. Grecian Architecture.

marched with a part of his army to this spot, and caused himself to be proclaimed the Son of Jupiter! The obedient priests complied, and paid him divine honors, which he afterwards claimed as his due. The temple was twelve days journey from Memphis, through inhospitable deserts and plains of sand. The soldiers, when they found themselves surrounded by these boundless seas of sand, where the eye for days could not discover a single tree, or a sign of vegetation, were sadly frightened, and undoubtedly cursed, in their hearts, the mad ambition of their leader. The water which they had brought with them in goat-skins, upon camels, entirely failed. In this extremity, they were relieved by the timely falling of a shower, which was cunningly ascribed to the peculiar favor of the deity—Jupiter Ammon. At last, this

splendid edifice burst upon their longing sight, filling them with wonder and admiration. It stood upon a spot of fertile land, surrounded by thick groves of beautiful trees, above which its towering columns rose, in majestic grandeur. The reports which the soldiers of Alexander bore back to Greece, partook of the marvellous. The god, they said, was of immense size, and made entirely of emeralds and other precious stones. His head and the upper part of his body resembled a ram. On many parts of the building are still seen this representation of the god, and various emblems of sacrifices offered by his worshipers. The walls of this, and all the other Egyptian temples, are covered with hieroglyphics. Over the door-way of the portico is a winged globe, a common and favorite ornament for the entrances of temples.

Long, long, had a darkness, truly *Egyptian*, wrapped these famous *hieroglyphics* in impenetrable mystery. But the veil is lifted, and a flood of light is poured upon them:—the dust of ages is brushed away from these faithful records of forgotten ages. A young enterprizing Frenchman, named Champollion, has discovered the invaluable secret of reading hieroglyphics. He is now engaged, with an older brother, in prosecuting his researches. Their labors have produced the most satisfactory results. We are impatiently waiting for the work which they are now preparing—a work, which will greatly increase our knowledge respecting Egyptian antiquities.

Architecture had made great progress, from the time when columns were first constructed, to the period when the portico of Latopolis was built. Observe the collec-

COLLECTION OF FRAGMENTS.

From Ruins in Egypt.

tion of fragments, Plate VI. One of the simplest and apparently most ancient forms is that marked A. These support a fine door-way or entrance to the tomb of Silsilis. Here we see the winged globe again. This column is a representation of a bundle of reeds, bound together near the top with a cord, which is wound several times round. A square stone, which is now known by the term *abacus*, is then laid upon the top. The part between this stone and the binding bulges out, as if crushed by the incumbent weight. This seems to have been the first idea of what afterwards became a regular capital. The bulged part was next decorated with reeds and hieroglyphics. See Plate VI, B. The shaft was divided by a number of belts, and ornamented with reedings, flutings and sculptures. Afterwards the capitals were form-

ed into elegant vase-shapes, decorated with leaves and flowers of the lotus or lily of the Nile. Among the ornaments of these capitals are also found, leaves of the palm, date, vine and papyrus. See Plate VII. No. 1, 2, 3, 4, 5. These show a very fine taste, and were undoubtedly afterwards imitated in Grecian Architecture. No. 6, is a capital from the temple of Tentyra. It is composed of four heads of the goddess Isis, with drapery about them; the profiles may be seen on the sides. Observe the abacus above this capital, (No. 6.) It is not a square flat stone, like the others; it is of a cubical form, of the diameter of the shaft, and is richly ornamented with hieroglyphics.

Alexandria, the splendid city built by Alexander, at the Delta of the Nile, was ornamented with obelisks, columns, sphinxes, &c., from the ruins of ancient Egypt.

Thebes itself was an immense quarry, from which alone, vast numbers of those elegant works were taken. Cairo was built out of the ruins of Alexandria. Rome shared in the spoil. The superb obelisk, still standing in the Piazza del Popolo at Rome, was brought from Heliopolis, by order of the Emperor Augustus.* The Solar obelisk of red granite, now standing in the square of Mount Citoria, at Rome, was also brought from Hieropolis, by Augustus. The height of this obelisk is ninety feet; it is covered with hieroglyphics, executed in fine style.

France, England, and other European countries, can also show splendid specimens, brought by travellers, from that land of wonders.

The Egyptians must have been a very powerful people, possessing much original,

* Our Saviour was born in the reign of this Emperor.

inventive genius, and immense physical resources. Whether the despotism which enthralled them, was that of a cunning priesthood, or ambitious unlimited sovereigns, is uncertain; probably the former, as most of these remains were temples, dedicated to the worship of their deities. "No people," says Champollion, "either ancient or modern, ever conceived the arts of architecture and sculpture on so *sublime* and so *grand* a scale, as the ancient Egyptians. Their conceptions were those of men a hundred feet high."

CHAPTER III.

INDIAN OR HINDU ARCHITECTURE.

From Egypt, we suppose that the arts were spread through the southern coun-

tries of Asia. The ancient edifices of Hindostan resemble those which we have described. Their sacred edifices were of five different sorts.

1. Pyramids.
2. Excavations or caverns.
3. Square or oblong courts.
4. In the form of a cross.
5. Perfectly circular.

1. Pyramids.—These are very far inferior to those of Egypt, and are so much surpassed by other remains of ancient Hindu architecture, as not to need particular notice.

2. Excavations.—The three most celebrated places where these have been discovered, are *Elephanta*, *Salsette* and *Ellora*.

Look on your map of Asia. Find Bombay. Well; the island of Elephanta is near this; it is so called from a great figure of an Elephant, which is cut upon the rocks on the southern shore. A grand temple is here carved out of the solid rock; it is one hundred and twenty feet square, and is supported by four rows of very large columns. See Plate VIII. Observe, these columns have a very high, square base; then a four-sided, ornamented finishing to the base. The shafts are very short, reeded, and bulging out at the bottom. The capitals though reeded like some you have seen, are larger, and flattened out, as if the weight of the roof had pressed them down. Along the sides of the cavern are about fifty colossal statues, from twelve to fifteen feet high, having their heads ornamented with crowns, helmets and other

Plate VIII

decorations. Most of them are hideous looking creatures with shockingly unnatural countenances. Some of them have four hands, others six or eight. The face of the great three-headed bust, (See the Plate,) is five feet long, and the breadth across the shoulders is twenty feet.

This subterraneous temple is somewhat injured by the sea-breeze, to which it is constantly exposed, and that ruthless spoiler Time:

> "Whom stone and brass obey,
> Who gives to every flying hour,
> To work some new decay."

Canara in the Island of *Salsette*. This is represented by travellers as very magnificent.

There are four stories or galleries hewn out of a high perpendicular rock, into which

open more than three hundred apartments. Before the entrance into the grand temple or pagoda, stand two colossal statues twenty seven feet high. Thirty five octagonal (eight-sided) columns support the roof of this temple, which is not flat like Elephanta, but grandly arched. The bases and capitals of these columns are formed of tigers, elephants and horses finely carved, and represented crouching down, as if to support the incumbent weight. There are said to be not less than six hundred figures of idols, within the excavations at Salsette.

But wonderful and splendid as are these excavations, they are far surpassed by those of *Ellora.* A modern traveller says; "No monuments of antiquity in the known world are comparable to the Caves of Ellora, whether we consider their unknown origin, their stupendous size, the beauty of their

architectural ornaments, or the vast number of statues and emblems all hewn and fashioned out of the solid rock!" It would require a large volume, to give only an outline of these amazing works. It seems like a land of enchantment. "On a close approach to these temples, the eye and imagination are bewildered with the variety of interesting objects that present themselves on every side. The feelings are interested to a degree of awe, wonder, and delight, that at first is painful, and it is a long time before they become sufficiently sobered and calm to contemplate with any attention the surrounding wonders." "Conceive the burst of surprise at suddenly coming upon a stupendous temple, within a large open court, hewn out of the solid rock with all its parts perfect and beautiful; standing proudly alone upon its native bed, and de-

tached from the neighboring mountain by a spacious area all round, nearly two hundred and fifty feet deep, and one hundred and fifty feet broad; this unrivalled fane rearing its rocky head to a height of nearly one hundred feet—its length about one hundred and forty five feet, by sixty two broad—having well formed door-ways, windows; stair-cases to its upper floor; containing fine large rooms of a smooth and polished surface, regularly divided by rows of pillars; the whole bulk of this immense block of *isolated excavation*, being upwards of five hundred feet in circumference." Around this, are three magnificent galleries or verandahs, supported by columns and adorned by gigantic Hindu deities. "Within the court and opposite these galleries, stands KEYLAS THE PROUD, wonderfully towering in hoary majesty, a

mighty fabric of rock, surpassed by no relic of antiquity in the known world."

Far inferior to this vast building in size, is the exquisitely beautiful little temple of Indra. It is a copy on a small scale of the mighty Keylas. (See plate IX. Title page.) Indra Subba, as it is called, is an insulated temple, at Ellora, with a wide area or open space around it. This space is terminated on three sides by a spacious gallery supported by columns, carved into the perpendicular rock. The little temple is left completely insulated as represented in the plate, the galleries being some hundred feet distant. It would seem to the observer, that these curious and stupendous works have been constructed downwards: that the workmen began at the top of the rock, chiseled first the roof of the temple; scooping out at the same time the area around, and thus

worked gradually down, till the temple was finished to its base, where the foundations remain immoveably fixed, a part of the primitive rock. Nothing can remove them but the convulsions of the final catastrophe, when

"Rocks fall to dust, and mountains melt away."

The inner columns of the temple of Indra you may observe, have globe-shaped capitals, the shafts are not fluted. The outer columns are different; the capitals consist of two reeded *cushions*, pressed down; the shafts have a small space fluted near the middle; they rest upon finely moulded bases. For what purpose the single column standing by the temple was designed is uncertain—probably to give a very conspicuous situation to the idol, which appears to be seated upon the top of it. This large

INTERIOR OF VISVA'CARMA, AT ELLORA.

column, has a high square base beautifully sculptured. The roof to this elegant little temple, is highly finished. Nothing could be more perfect, than some of the delicate chiseling of the ornaments.

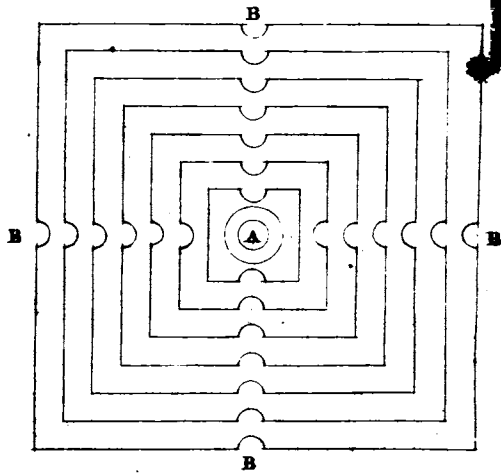
Visvacarma, also at Ellora, (See Plate X.) is a vaulted chapel. Length, eighty feet; breadth, forty-four feet; height to the centre of the arch, thirty-five feet six inches. From the sides of the roof, project beams of rock, or rafters, extending over the whole of this finely arched roof, and having at the termination of each, a sculptured figure, in a sitting posture. The columns are square and massive; still it has a light elegant appearance in consequence of the lofty, striking vault. The great altar at the end of the chapel is twenty-four feet high. In front of the altar, is the figure of Vĭsvacarmă under a canopy. The following lines

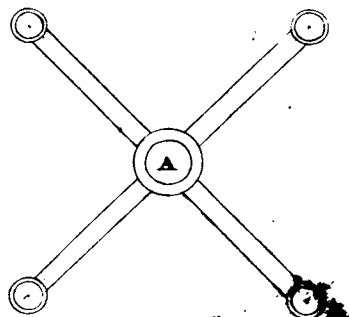
from Congreve, furnish a fine description of this beautiful chapel.

How reverend is the face of this tall pile,
Whose ancient pillars rear their *rocky* heads,
To bear aloft its arched and ponderous roof,
By its own weight made stedfast and immoveable,
Looking tranquility, it strikes an awe
And terror to my aching sight.

Who can believe that such magnificent undertakings were designed and executed by the feeble, indolent Hindus? No; an entirely different race of men, must have brought out these forms of beauty from their rocky bed. Conjecture, however is useless—there they remain, a riddle and a puzzle for future generations.

The *third* kind of Indian temples were composed of square or oblong courts of immense extent. The largest of these is that





Ground plan of Square and Circle Pleasure Pavilions.

of Seringham near Tritchinopoly. This pagoda is composed of seven square enclosures, the outermost is a mile from corner to corner—that is, four miles square. The walls of Seringham are twenty-five feet high and four feet thick; they are three hundred and fifty feet from each other, leaving a space in the middle of about one thousand feet square. This contains the sanctuary of Vishnu into which no European is willingly permitted to enter. To each of the seven enclosures are four gateways under lofty towers. These gateways and towers stand exactly opposite to each other; (See Plate XI. Fig. 1. which is designed merely to give an idea of the ground-plan of these square pagodas. A, is the sanctuary; B, the lines of gateways and towers.)

The *fourth* kind of Indian Pagoda is in the form of a cross. The most noted of these is at Benares, on the banks of the Ganges. The form of this pagoda is a cross, having the branches of equal length. (See Plate XI. Fig. 2.) The cupola is in the centre; at the extremity of each branch there are lofty towers, with balconies. The conqueror Aurengzebe killed a cow within the precincts of this temple and polluted it in that way, so that the Hindus entirely forsook it. The cow is a sacred animal. The poor Pagans shudder with horror, at the idea of eating *beef.*

A *fifth* set of pagodas are made in a circular form. The celebrated pagoda of Juggernaut, which Dr. Buchanan visited and afterwards so accurately described, is of this form. It has been compared by a late traveller to "an immense butt or wine cask, set on end." Of course, the appear-

ance of the Pagoda of Juggernaut cannot be very elegant. Its sacred domains afford pasturage for twenty thousand cows! The image of the idol stands upon a high altar in the center of the building. It is a great black stone!

We cannot help reflecting, upon the boundless expense, the toil, suffering and groans that these sacred edifices must have cost the enslaved, degraded people who constructed them, under the direction of a wily priesthood, to perpetuate a monstrous system of Idolatry.

CHAPTER IV.

PERSIAN ARCHITECTURE.

Babylon and Nineveh appear to have existed at the same period of time, and to

have both been of the same enormous size. Some writers say, they were both sixty miles in circumference. Babylon, stood upon the plains of Shinar, between the rivers Euphrates and Tigris. The Nimrod mentioned in the Bible, is supposed to have been the original founder, two thousand years before Christ. The celebrated Queen Semiramis, completely rebuilt it twelve hundred thousand years B.C. It was strengthened and beautified by succeeding sovereigns, and at length brought by Nebuchadnezzar, six hundred years, B.C. to such a degree of splendid magnificence, as to make it one of the wonders of the world. An ancient historian says, the walls of Babylon were three hundred and fifty feet high and eighty seven feet broad; "Prodigious! Prodigious!" as Dominie Sampson says. As high as the top of the Cupola of St. Paul's Cathedral,

London! Higher than any steeple in the United States! And sixty miles in circumference! These walls were built of brick cemented with bitumen, which is a kind of earth which soon hardens in the air. This height seems so great and so unnecessary for walls, that we are apt to be somewhat incredulous; but who shall say "It is impossible," when so many stupendous, wonderful works of antiquity are still remaining in the world? It is the opinion of some learned writers, that the Tower of Babel stood in Babylon, and was converted into the Temple of Belus. The accounts of this famous Tower are so exaggerated, that it is difficult to come near the truth. Some eastern writers say the Tower was twelve miles high! The builders must have had cold work up there. St. Jerome affirms that the ruins were *four* miles high!

But to come down to something that looks like facts. Strabo says the Temple of Belus was six hundred and sixty feet high—that is, higher than the great Pyramid. Around the outside of the building, there was a winding passage from the bottom to the top, wide enough to permit carriages to pass each other. It is said that the ruins of this Tower or Temple of Belus, still remain, and I remember a few years since, a gentleman showed me some very curious greyish bricks, which were made of clay and chopped reeds. He said, "he took them himself, from the Tower of Babel." Undoubtedly he brought them from the ruins of Babylon. But as the entire city was built of brick, and is now a heap of crumbled ruins, nothing can be known of its Architecture.

The beautiful ruins of Persepolis, afford a fine specimen of Ancient Persian Archi-

tecture. Persepolis is situated in 30° 40′ N. Latitude, and 84° E. Longitude; in the province of Fars or Faristan. No temples are left standing, but the splendid remains of the palace, partially destroyed by Alexander, 327 B. C. have been accurately described by travellers. Le Brun, a Frenchman, spent three months in exploring and taking delineations of these ruins. He concludes after much discussion, that Persepolis was built by Darius and Xerxes. Not a trace of any city remains in the neighborhood of these ruins.

This palace has been called Chilmenar, which signifies, Forty Columns. Travellers have thence inferred that only that number belonged to the edifice; Le Brun counted the traces of two hundred and five; only nineteen were then standing; many others lay prostrate which were only partially de-

stroyed. The door-ways or entrances are still in fine preservation; they exactly resemble the entrances to Egyptian temples. (See the top of a door-way Plate XII.) This is a beautiful specimen of Architecture, and would even now, be a suitable and elegant door-way.

The columns are much more slender, than those which we have studied in Egyptian Architecture. They are seventy-two feet high, and only seventeen inches in diameter. The capitals, (See Plate XII.) are very long, occupying about one fourth of the height of the column. It is supposed by some writers, that this palace was built by Egyptian workmen; but that the Persians, abhorring every thing pertaining to the Egyptian mythology, obliged them to decorate this structure, with the representations of objects to which they had been

FRAGMENTS FOUND AT PERSEPOLIS.

1. Top of a doorway. 2. Capital. 3. 4. Bases.

accustomed in their own slightly-constructed edifices. They suppose the Persepolitan capitals are intended to convey the idea of bunches of feathers, and rich silks tied around the top of tall wooden posts. The shaft does not diminish towards the top. Almost all the ornaments of the Egyptians were sacred emblems; here too, the sculptures represent religious processions, and sacrifices; horses were offered to the sun, and oxen to the moon. Some of the persons walking in these processions carry umbrellas! which we have been accustomed to think perhaps, quite a modern invention.

Observe the bases. (Plate XII.) They were only a little more than four inches high and about twenty-five inches in diameter. They are very different from Egyptian bases; round, and very delicately carved.

No fragments of a roof have been discovered, which these columns could have supported; they are quite too slender to have borne a stone roof; the probability is, there was only a temporary covering. Eastern monarchs have always been extravagantly fond of sumptuous hangings of cloth of gold, tapestry and rich silks. These very elegant columns probably supported silken hangings, which served for a covering and for partition walls. As this was only a summer palace they could be removed, or when injured replaced at pleasure.

This mouldering solitary ruin was the chosen seat of merriment and splendor. It is silent now—silent, as the deepest caves of ocean when all her murmurs are hushed to rest. Awfully silent, save when some tall column which long has tottered

upon its base, falls with thundering sound, startling the amazed traveller. There, stood the gorgeous throne. There, bowed the abject throng. Soft, sweet music floated around these lofty columns; perfumed incense filled the air. The mournful sighing of the wind is now the only music—damp vapors load the unwholesome air.

The sceptred kings—the subject millions—Where are they? "Echo answers, Where are they?" Desolation, reigns sole monarch, now. The dust of the mighty ones is mingled with that of their meanest slaves, and perhaps, is now scattered by every breeze over this monument of their brief glory.

The Tombs of the Kings at Persepolis, are also fine specimens of Persian Architecture. The one, in which it is said the body of Darius was deposited, is the most

magnificent. All these tombs are excavations in the solid rock. In forming this (Darius' Tomb, See Plate XIII.) a deep recess was first cut in the rock. The perpendicular front which presents itself within this recess is seventy feet high, seventy feet in breadth at the base, and forty feet wide in the ornamented part. The lower columns support a sculptured gallery. These columns are very slender, all the way of equal size, and have enormous capitals composed of oxen's heads and necks. Upon the columns rests the resemblance of four great beams; this forms the *architrave;* upon this runs a *cornice*, which projects nearly three feet. But it is necessary to explain these terms.

That portion of a building which rests horizontally upon columns is called the *entablature.* This is divided into three parts, viz:—

TOMB of the KINGS

1. The *architrave;* this is merely a strait, plain piece, laid along on the top of the columns.

2. The *frieze;* this represents the ends of the cross beams of the building, resting upon the architrave, having the spaces between these ends filled up, having also, a moulding to cover the place where it is joined, and to divide it from the architrave.

3. The *cornice;* this is the upper part, and was originally designed to represent the eaves of a house, showing the ends of the rafters. (This will be more distinctly exemplified, when we come to Grecian Architecture.)

To return to the Tomb, which we were examining. Here is an architrave, and a cornice, but no frieze. Above the cornice is an ornamented piece of stone-work, with eighteen sculptured lions upon it; nine look-

ing one way and nine the other, at a small vase in the middle. Above the lion gallery, are two rows of human figures, nearly as large as life, holding up their hands and supplying the place of columns to support entablatures. At each extremity of these, is an odd-looking column, surmounted by the head of a non-descript animal. Above, is the figure of a king, standing before an altar. Still farther above are other figures not very distinctly made out. Other sculptures in niches, ornament the rock which forms the recess.

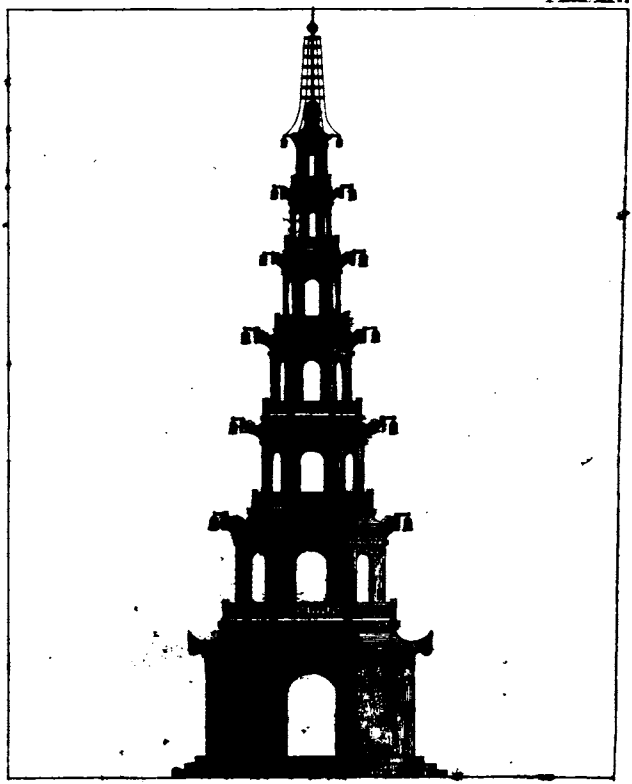
CHAPTER V.

Upon comparing the Egyptian, Hindu and Persian Architecture, we find a very strong resemblance in the most striking

features. They differ however in some respects. The Egyptian edifices are the most simple. They have fewer curved outlines. They are more massive and solid. The architects knew nothing of the structure of an arch for support or ornament. The Hindu buildings have the rounded, pagoda form, which is their most striking peculiarity. The Persian columns are much more delicate and the decorations more light and elegant than those of Egyptian Architecture. It is thought by some writers that Persepolis was built by Egyptian workmen, carried thither by Cambyses. Be this as it may, no one can doubt that there was a communication of architectural knowledge between these three countries, which possess almost all that is great and ingenious in Ancient Architecture.

Wonderful remains! Splendid relics of the power and the folly of man! Usefulness, is inscribed upon Nature's works—Utility and Beauty combined. But, on these ponderous structures, who can fail to read, "Vanity, Vanity, Vanity!" They are monuments, left for the wonder and curiosity of mankind, but not for their imitation.

"Dost thou, then, listening to the traveller's tale,
Of *temples* grand, and towns of ancient fame,
And *pyramids*, and *tombs*, renown'd of name,
And lonely *columns*, hid in some sweet vale—
Dost thou, then, long to voyage far away,
And visit other lands, that thou may'st view
These varied scenes, so beautiful and new?
Thou dost not know how sad it is to stray
Amid a foreign land, thyself unknown,
And when o'erwearied with the toilsome day,
To rest at eve, and find thyself alone."



A CHINESE PAGODA.

I shall tell you but little, about

CHINESE ARCHITECTURE.

Their buildings exhibit nothing that can claim our admiration as fine specimens of the art. The palace of Pekin, though very costly has mostly wooden posts, japanned and gilt. Their other buildings are in the same light, gaudy style. Their pagodas have the appearance of tents, piled one upon another; indeed, the tent seems to have been the original model for all their buildings. Plate XIV, is a view of a pagoda of this sort. It is of an octagonal form and is divided into seven stories, which gradually decrease in size. Around each story is a gallery with lattices of gilt iron. Below these galleries are wide cornices, having sharp-pointed corners upon which are suspended little bells. The top of the

edifice is finished with the uncouth ornament of a long pole, into which are fastened a number of iron rings. Chains are passed through these rings and then fastened to the eight corners of the upper roof. The want of architectural elegance, the Chinese endeavor to supply by a gorgeous display of painting, varnishing and gilding. Their country, far removed from the restless activity and enterprising ambition of European nations, has long remained stationary in its customs, laws, and knowledge of the arts and sciences. The whole nation probably once lived in tents. As they increased in numbers and became fixed in their abodes, they exercised all their ingenuity in fixing up their more substantial buildings in the style of their former habitations. For many ages they have been under the control of weak-minded despots

and every thing like foreign innovation has been prevented by severe laws. In trifles, they are the neatest and most exact imitators in the world—but their imitations are confined mostly to works in porcelain and ivory. It would be a capital crime to build a house after a foreign model.

JEWISH ARCHITECTURE.

Very little can now be known of *Jewish Architecture.* The whole city of Jerusalem was made one vast heap of ruins, where not a single vestige of its former magnificence could be discovered. This, my readers know, was in fulfilment of prophecy, and was accomplished by the Romans under Titus, seventy years after the birth of our Saviour.

It does not appear that the Jews had made very great advances in architecture

at the time their most famous building, the temple of Solomon was erected. They might have acquired some knowledge of the art in Egypt; but that would be nearly lost with the race who perished in the wilderness. After they reached the land of Canaan, they were too much disturbed by their enemies for many years, to attend much to the arts of peace. During the reign of David, although that king was constantly engaged in war, many of the materials for the building of the temple were collected. When Solomon was about to commence the work, he sent to a neighboring king for workmen to assist him, because the Tyrians and Sidonians were so much more skilful in architecture than his own people. For the labor of these workmen, Hiram, the King of Tyre, received a large sum annually. He also furnished

Solomon with large quantities of timber, which was conveyed on floats to some convenient port in his dominions.

The temple was built upon the summit of Mount Moriah. It was rendered more magnificent by the immense quantity of gold, silver, carving, embroidery, &c. than by its architectural elegance. This mode of concealing the want of skill in the artist, and beauty of design in the structure, is still resorted to in the east; a profusion of every thing costly and brilliant in decoration, dazzling the eyes of the beholder, and in their estimation, supplying entirely, the place of architectural grandeur and beauty. Following the only guide with which we are furnished, the Old Testament, I shall attempt a brief description of Solomon's Temple. The account of the sacred writers would seem to be, at first

sight, sufficiently minute, but upon examination, it will be found to contain a very particular description of the ornaments of the temple, but no very clear account of its general structure. This doubtless, was often described in other writings of that period, which have not come down to us.

The temple was enclosed on all sides by a gallery or portico. This enclosure was divided into two courts, the *exterior* and *interior*. The first was called, "the court before the temple;" the other "the court of the priests." These two courts were separated from each other, either by a wall or a light partition of lattice work. There were also various apartments around the main building, which were occupied by the priests and Levites who were employed about the sacred duties of the temple.

The *great altar* stood in the court of the priests; it was built of large rough stones and then covered over with brass.

The very large brazen laver called the *molten sea* which stood in one of the courts, could contain two thousand baths. It was supported upon the backs of twelve oxen, three looking towards the north, three towards the south, three to the east, and the same number to the west. The brim of the laver was profusely ornamented with lilies cast in brass. Besides this immense laver, there were ten smaller ones, standing upon highly ornamented bases within the court. These ten lavers had wheels "like chariot wheels," so that they could be moved about the court at pleasure.

The part of the temple called the sanctuary was sixty cubits (about ninety feet) long, twenty cubits broad and thirty cubits

high; part of this was "the oracle" called sanctissimum or most holy. This part of the sanctuary was but twenty cubits high, so that there must have been a chamber above, ten cubits high.

In front of the sanctuary, was the porch, an hundred and twenty cubits high, twenty broad from north to south, and ten long, from east to west. The passage into the porch was an open entrance lofty and broad, without any door; but the entrance into the sanctuary was closed by a folding-door which was ornamented with carved work covered with gold, and it turned on golden hinges. A similar door, was at the entrance to the Holy of Holies; both of them were covered with veils of embroidered linen.

Two large columns of brass, which seem to have been merely for ornament, as we

are not told that they supported any part of the edifice, stood near the entrance of the Porch. These columns were twelve cubits, (eighteen feet,) in circumference. The *shafts* of these columns were eighteen cubits high, the capitals five cubits, and the bases thirteen, making the whole height thirty-six cubits, (about fifty-four feet.) These proportions more resemble those of the columns at Elephanta than any others in our recollection, particularly the height of the bases. The capitals were highly ornamented with leaves, pomegranates, lilies, chains, &c. cast in brass; the shafts and bases were hollow, the brass being throughout only a hand's breadth in thickness.

The Sanctuary was built of large square stones, hewn and fitted at the quarry. They

were covered with boards of cedar curiously carved and overlaid with gold.

The sacred historians have mentioned several other buildings which were erected by Solomon; but it is impossible to form an accurate idea of them.

In studying the Egyptian, Hindu and Persian Architecture, we were aided by the splendid ruins which remain as specimens; but here, we have no such guides; our researches, therefore, cannot lead to any thing very satisfactory.

It will be remembered, that all the edifices about which you have been reading, were erected long before the birth of Christ. The famous ruins of Palmyra or Tadmor in the Desert, which have been described by travellers as ancient remains, built by Solomon, have been discovered to be of later origin.

The rules of the art, were not fixed at this early period; few explanations have been necessary, and few technical terms have been used. When Architecture was brought to perfection by the genius of the Greeks, every part of an edifice had its appropriate name,—its proper situation,—its precise proportion, &c. &c. These will all be fully explained in Part II, under the article, Grecian Architecture.

QUESTIONS ON CHAPTER I.

WHAT is Architecture? How many kinds are there? What is Civil Architecture? What kind of buildings come under this branch? What is Naval Architecture? What kind of vessels are mentioned? What other things belong to Naval Architecture? What is Military Architecture? What is it usually termed?

Which is the subject of this Book?

How long has the art been practised? What is the origin of every human invention? Does man advance rapidly in civilization?

What are the buildings of savage nations? Describe one of their rude huts. What people have had such dwellings? What did they call them? Describe the second kind of primitive huts, Plate I. fig. 2. What people still inhabit these clay huts?

What other kind of habitations were used at an early period in the history of mankind? Describe them. By whom were they used in ancient times? By whom at the present day?

What important step in Architecture is next mentioned? What kind of dwelling houses are used in

some parts of Asia, &c.? What important advance in the art is next mentioned?

After men had provided comfortable abodes for themselves, what would be the buildings next erected? What is here named as a building probably erected for this purpose? What prompted Nimrod to this undertaking? How was this presumptuous undertaking stopped?

CHAPTER II.

Were houses at first strongly built? From what kind of buildings then, must we discover and trace the progress of Architecture? What countries still possess the most splendid remains of ancient architecture?

Can we determine certainly where this art was first most successfully cultivated? What country is considered the birth-place of the arts and sciences?

What evidence is there that Egypt was once wealthy and densely populated? What three forms of ancient buildings are mentioned? Which of these is most famous? Where are the Pyramids? How many are still standing? Where are they? Describe the Great Pyramid. Describe the second in size. For what purpose were the Pyramids erected? What was the be-

lief of the ancient Egyptians respecting the soul? By whom has it been supposed that some of the Pyramids were erected? Are there any remarkable temples? Where are they? What is the greatest edifice in Egypt? By what is the entrance to Luxor distinguished? What are obelisks? What suggested the idea of colonnades? Where was religious worship first performed? What is the body of a column called? What are *flutings?* What are *reedings?* What is the *base?* What is the *capital?* What is *bas-relief?* To whom was the temple of Latopolis dedicated? Who marched to this Temple with his army? What did he demand of the priests? What are the walls covered with? What are Hieroglyphics? *The symbolical mode of writing, practiced by the ancient Egyptians.* Who has discovered the mode of reading them? Will this discovery increase our knowledge of Egyptian history? Describe one of the simplest and most ancient forms of columns. What is the square stone above the capital called? How might a regular capital have been first suggested? What ornaments decorate the Egyptian capitals? What place is mentioned as the quarry from which many beautiful specimens of Architecture were taken? Where were they first

used? What modern place was built out of the ruins of Alexandria? What other city shared in the spoil of Thebes? Who carried those famous obelisks to Rome? At what age of the world? What modern countries have fine specimens from Egyptian ruins? What was the character of the ancient Egyptians? What was probably the despotism which enthralled them? What says Champollion of their genius for architecture and sculpture?

CHAPTER III.

Where is it supposed that the arts were next most successfully cultivated? What country is next mentioned as having edifices similar to the Egyptian? How many kinds are mentioned? Are the Pyramids equal to those of Egypt? At what places are the most remarkable excavations found? Where is Elephanta? Of what is the temple at this place formed? Where is Canara? What is the report of travellers respecting these remains? Are they surpassed by others? What is said by a modern traveller of the *Caves of Ellóra?* Describe the Temple of Indra Subba. Describe Visvacarma at Ellora. What is the form of the third kind of Indian temples mentioned? The fourth kind?

The fifth? What celebrated pagoda is of this form? What is the idol to whom this immense edifice is dedicated? What reflection closes this chapter?

CHAPTER IV.

What great cities are mentioned as existing at the same time? Where was Babylon situated? Who is supposed to have been the founder? At what period of time was it founded? Who rebuilt it? When? By whom was it completed? What was said to have been the height of the walls of Babylon? What the circumference? What Temple is supposed to have been erected upon the ruins of the Tower of Babel? What were the dimensions as given by Strabo of this temple?

Where is Persepolis? By whom was it built? What splendid ruins are found there? Is there any resemblance in the Persian Architecture to the Egyptian? How does it differ? By what architects is it supposed that this palace was built? What was the design of the Persepolitan capitals? Are the bases different from the Egyptian? What did these columns probably support? What other specimen of Persian Architecture is mentioned? What is an *entablature?* Into how many parts is the entablature divided? Name

them. What is the *architrave?* The *frieze?* The *cornice?* Do you see any frieze to the entablature upon the tomb?

CHAPTER V.

Is there any resemblance between the architectural remains of the three countries, which we have described? How do they differ? Was there a communication of architectural knowledge? Are these works worthy of imitation? What is said of Chinese Architecture? Describe one of their Pagodas. How do the Chinese endeavor to supply the want of architectural elegance? What was the origin of the form of their pagodas and other buildings?

Do we know much of Jewish Architecture? Why? Had the Jews made much progress in this art at the time of the building of the Temple? Who were called to assist in its erection? Where was the temple built? How was it rendered magnificent? How was it enclosed? How was this enclosure divided? Where stood the great altar? How was it built? Describe the '*molten sea.*' How large was that part of the temple called the sanctuary? What were the dimensions of the porch? How was the en-

trance to the sanctuary closed? Describe the two columns which stood near the entrance of the porch. What columns do they resemble in their proportions? How were the capitals ornamented? Of what materials was the sanctuary built? Have we any guides in studying Jewish Architecture? When were all the edifices erected about which we have been reading? Were the ruins of Palmyra built as has been supposed by Solomon? Were the rules of the art fixed when the buildings which have been described were erected? By whom was Architecture brought to perfection? Where will the terms of the art be fully explained?